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(54) **FAST CHARGING SYSTEM FOR ELECTRIC VEHICLES**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2002/0106540 A1 8/2002 Shioya
2008/0044323 A1 2/2008 Rosas
2009/0246596 A1* 10/2009 Sridhar B60L 11/1816
429/513
2010/0134067 A1* 6/2010 Baxter B60L 3/0084
320/109

(Continued)

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(57) **ABSTRACT**

The embodiments described and claimed herein are apparatus, systems, and methods for charging an electric vehicle at a stationary service station. In one embodiment, the service station includes a power generation component including at least one fuel cell, a fuel supply component for supplying fuel to the power generation component, a charging component including at least one customer charging station, and a control component for controlling and monitoring the other components and for providing accounting and billing functions.

24 Claims, 8 Drawing Sheets

